Great Bay Siltation Commission Meeting

NH Department of Environmental Services/Coastal Program
Pease Field Office, Portsmouth, NH
January 26, 2009, 1:00 PM

Members: Rep. Judith Spang, Commission Chair, Durham
Cynthia Copeland, Strafford Regional Planning Commission
Ted Diers, NH Coastal Program
Ray Konisky, The Nature Conservancy
Justin Richardson, Newington Conservation Commission
Tracy Shattuck, Pease Development Authority – Division of Ports & Harbors
Fred Short, University of New Hampshire
Phil Trowbridge, Piscataqua Region Estuaries Project
Larry Ward, University of New Hampshire
Alison Watts, Newfields Conservation Commission
Peter Wellenberger, Great Bay National Estuarine Research Reserve

Other Attendees: David Funk, Great Bay Stewards
Christian Williams, NH Coastal Program

Summary:

Chairperson Spang presented Commission members with a document entitled "Framework for Final Report of the Great Bay Sedimentation Study Commission" (Framework). Ted Diers and Chris Williams of the NH Coastal Program developed the Framework to assist the Commission with preparation of its Final Report due on or before November 30, 2009. Chairperson Spang stated that earlier today she had met with Mr. Diers, Mr. Williams, and Commission members Ray Konisky and Justin Richardson to review and discuss the Framework. She stated that today's meeting would focus primarily on review and discussion of the Framework.

Before reviewing the Framework, Chairperson Spang asked Larry Ward of UNH to provide an update on the status of his efforts to develop a Great Bay bathymetric study. Dr. Ward stated that his work on the bathymetric study began in earnest in early January. He is currently retrieving and compiling all available bathymetric data for Great Bay and its tributaries. Each data set will then be converted to a common format and bathymetric maps will be prepared. From here, an updated bathymetric map of the Great Bay Estuary will be created with the goal of developing a seamless bathymetric map of the system. Comparisons of each database will also be conducted to identify and evaluate changes in bathymetry. Dr. Ward hopes to complete a final report of the study by June 2009. The study should benefit the work of the Commission by identifying areas that have experienced bathymetric changes and changes in channel morphology.

Justin Richardson of the Newington Conservation Commission and Fred Short of UNH indicated that there are numerous pipelines running beneath Great Bay, each of which would likely have required fairly extensive surveys that may help to inform the study being performed by Dr. Ward.

Dr. Short also stated that he has 10 years worth of surface elevation data from 1995-2005, which was collected from approximately nine locations in Great Bay, Little Bay and the Piscataqua River.

The dataset, which should be available in July 2009, should be useful for determining rates of sedimentation.

Chairperson Spang then asked Ted Diers to review the above-referenced Framework. Mr. Diers briefly reviewed each of the Framework's sections, which include a) causes of sedimentation; b) effects of sedimentation; c) remediation; d) legislative recommendations; and e) appendices.

Justin Richardson stated that while it appears that the primary causes of sedimentation to the Great Bay Estuary are associated with land use, transportation and construction activities, the relative magnitude of each of these factors is unclear. He also stated that because of the lack of information regarding historic rates of sedimentation, it is difficult to assess the magnitude of the current sedimentation problem.

Ray Konisky of The Nature Conservancy stated that the re-suspension of sediments within the Great Bay Estuary must also be considered as a potential source of sedimentation. He stated that restoration of eelgrass and shellfish beds, which trap sediment, can serve to remediate the effects of sediment re-suspension.

Discussion followed regarding the relative importance of the many different causes/factors contributing sediment to the system. Ted Diers asked whether the Commission should focus on assigning numbers to each of the causes, based on their relative importance, in order to make recommendations about potential solutions. He suggested analyzing land-use by watershed and comparing the findings with established land use coefficients to draw general conclusions about the significance of the causes. Phil Trowbridge of the Piscataqua Region Estuaries Project stated that the ArcView Generalized Watershed Loading Function (AVGWLF) land-use model developed by researchers at Penn State University may be a useful tool. Specifically, he stated that he'd look at the land use classifications and the coefficients assigned to each classification within the AVGWLF model as a potential means of determining the relative importance of the different causes of sedimentation. He also stated that he'd run and analyze the results of the total suspended solids (TSS) model for the Great Bay watershed as part of his water quality indicators work.

Chairperson Spang, in an effort to ascertain the recreational effects of sedimentation, asked Tracy Shattuck, Chief Harbormaster, Pease Development Authority – Division of Ports & Harbors (PDA-DPH) if PDA-DPH has information regarding mooring fields, specifically whether mooring fields have been closed due to shoaling. He stated that PDA-DPH does not have this information. He stated that the increase in the number of mooring fields in the Estuary is largely due to increased demand. He also stated that as the demand has increased so too has the size of boats. Larger boats require a deeper draft. It was suggested that anecdotal evidence of historic mooring fields could be obtained through aerial photos. Dr. Short recommended the U.S. Department of Agriculture as a potential source of aerial photos covering the Great Bay Estuary.

Discussion then focused on remediation. Dr. Short stated that he supports dredging within the Great Bay Estuary for ecological (i.e., eelgrass, shellfish and fish & wildlife restoration) and human use (i.e., navigation) purposes. Mr. Diers suggested that what's needed is a dredging plan for Great Bay and its tributaries that merges navigational dredging needs with potential restoration areas. It was recommended that the Commission establish a committee to look into the creation of a Great Bay dredging plan. Dr. Short agreed to chair the committee. Members that expressed an interest in participating in the committee include, in part, Ted Diers, Ray Konisky, Tracy Shattuck, Larry Ward and Chris Williams.

Next Steps:

1. Meeting of Dredging Committee, February/March 2009
2. Dam removal presentation, March/April 2009
3. Mooring owner survey, April/May 2009
4. Completion of Great Bay bathymetric study, Dr. Ward, June 2009
5. Analysis of AVGWLF and TSS models, Phil Trowbridge, June 2009

The next Commission meeting was scheduled for **Monday, March 9, 2009 at 1:00 PM at the DES-Coastal Program Pease Field Office in Portsmouth**.

Meeting adjourned at 3:25 P.M.

Framework for Final Report Of The Great Bay Sedimentation Study Commission

(HB 216, Chapter 31, Laws of 2007)

The Commission was established to study the causes, effects, and remediation of siltation in the Great Bay Estuary. Among its duties, the Commission is tasked with studying the historic and current sources of siltation in the estuary, studying methods of minimizing additional siltation, studying the impacts upon the aquatic and riparian ecosystem, and studying the recreational, social, and commercial uses of estuarine waters. To accomplish these duties, the Commission is divided into two subcommittees: "The Causes of Sedimentation" and "The Effects of Sedimentation."

The following is a framework for the Commission's Final Report due on or before November 30, 2009.

A. Causes of Sedimentation

The Causes of Sedimentation Subcommittee created a spreadsheet identifying sources of sedimentation to the Great Bay Estuary. The Subcommittee identified stormwater runoff, bank erosion, agriculture, construction activities, and waste water treatment facilities as primary sources of sedimentation. **Does spreadsheet identify gaps in knowledge?** If so, Final Report should make recommendation on how best to fill these gaps.

The Final Report should include a discussion of natural processes (i.e., erosion and sedimentation).

The Final Report should also make recommendations on how to prevent/reduce sediment from entering the watershed, including stormwater and land-use recommendations.

B. Effects of Sedimentation

The Effects of Sedimentation Subcommittee created a matrix that identifies four primary impact categories: 1) ecosystem; 2) recreational; 3) social; and 4) commercial. Each of the four impact categories is divided into subcategories with focus areas for each subcategory listed. For each focus area, a description of the anticipated impacts of sedimentation is described and references listed or data gaps identified. Based on review of the aforementioned matrix there are two major ecosystem impacts: 1) water clarity for eelgrass; and 2) smothering of fish habitat (i.e., smelt spawning) and shellfish beds. Minor ecosystem impacts include fish gill irritation and indirect impacts to habitat and the food web (i.e., loss of eelgrass). In the recreational category, the primary impacts are to rowing/boating and shellfish harvesting. Gaps exist, however, with regard to docks and moorings. Specifically, are docks and moorings being placed in deeper waters as a result of sedimentation? While there does not appear to be any evidence to support this, in part because the placement of docks and moorings is primarily dictated by boat size and access locations, it does warrant further study. There is no evidence of the social or commercial impacts of sedimentation, except for possible impacts to shellfish aquaculture. A survey of recreational boaters and recreational and commercial fishermen would help to determine if the public is being affected by sedimentation issues. Surveys could be distributed to mooring owners and marinas.
The Final Report should include a list of data gaps for each impact category and recommendations on how to best fill these gaps.

Regardless of the impact category, two critical pieces of information regarding sedimentation in Great Bay and its tributaries remain unknown: 1) where are the “hot spots?” and 2) what are the rates of sedimentation? The work currently being done by Larry Ward at UNH to compile and analyze existing bathymetric data from the Great Bay Estuary will provide insight into these issues. A full understanding of these issues, however, will require development of a sediment budget and collection and analysis of sediment cores.

C. Remediation

The Commission is also tasked with evaluating the desirability of remediation, and studying optimal means of remediation considering economic, ecological, and other relevant factors. The Final Report should provide a list of remediation measures with a discussion of the pros and cons of each. Potential remediation measures include: 1) prevention/reduction of sediment entering the Estuary through sediment trapping and stormwater improvements; 2) reconnection of floodplains and wetlands by allowing rivers to move so that major erosion events are minimized; 3) dam
removal (more information is needed on removal of dams in tidal systems – potential speaker for next/future meeting); and 4) dredging/sediment removal.

Dredging/sediment removal efforts should focus on habitat restoration, not solely navigational or recreational improvements. Dredging activities should target “hot spots” (identified by Larry Ward – see above). A sustained funding source will be needed. The pros and cons of the State purchasing its own dredge should also be discussed. The primary issue here is whether enough work exists to warrant a State dredge. The Final Report should recommend creation of a comprehensive dredge material management plan

that includes habitat restoration, navigation, recreation and private dredge projects, as well as a cost/benefit analysis of a state-owned dredge.

D. Legislative Recommendations

The Final Report should include legislative recommendations, including: 1) money for development of a sediment budget and collection and analysis of coring data; 2) new stormwater requirements for Great Bay towns; and 3) money for a comprehensive dredge management plan. The Commission must devote time to develop the wording for these recommendations to help ensure the objectives of the proposed legislation will be met.

E. Appendices

The Appendices should include meeting minutes, presentations, etc.